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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,120	08/30/2001	Minoru Hashida	381AS/50347	6937

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EXAMINER

MELWANI, DINESH

ART UNIT	PAPER NUMBER
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3677

DATE MAILED: 08/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/942,120	HASHIDA ET AL.	
	Examiner	Art Unit	
	Dinesh N Melwani	3677	

-- Th MAILING DATE of this communication appears on th cover sh et with the corr spond nc address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 8-30-01
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1.5</u> | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 8/30/01 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/942,120 filed on 8/30/01.

Acknowledgement is made of applicant's submission of:

Declaration and Fee filed on 12/03/01

The aforementioned items have been noted and officially inserted into the application.

### ***Claim Objections***

3. Claim 10 is objected to because of the following informalities: Typographical error in line 7. The applicant recites "plunder". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, it is unclear as to in what respect the radius of curvature is equal to or larger than 0.1.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Friend *et al.* (U.S. Patent No. 6,047,970). Friend discloses a seal mechanism having an annular retaining member (48) and a flexible member (28), wherein said mechanism is molded into one piece and has a sealing function. Friend's mechanism also comprises a stress reduction mechanism, radius (A), wherein material of the flexible member has been removed in order to reduce the stress generated in the flexible member near the inside corner of said retaining member.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend *et al.* (U.S. Patent No. 6,047,970) in view of Vegella (U.S. Patent No. 4,060,023). Friend discloses a sealing mechanism substantially as claimed, wherein said mechanism has a stress reduction mechanism including a gap between the innermost diameter of said retaining member and the outside diameter of a shaft mounted in said flexible member. However, Friend does not expressly disclose said gap being 0.9mm or less. Furthermore, Friend does not disclose the use of a plurality of sealing mechanisms. Vegella teaches the use of clearances (a, b, and c) to prevent over-stressing (i.e. stress reduction) by the movement of a piston rod. Vegella also expressly teaches that said clearances may be as small as 0.010 in. (0.254mm), substantially less than 0.9mm. Additionally, Vegella teaches the use of a plurality of sealing mechanisms (24 in Figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to utilize the teachings of Vegella, in regard to the clearance dimensions and a plurality of sealing mechanisms, to modify Friend and prevent the occurrence of excessive pressure around the sealing lip as well as providing additional sealing as afforded by the a plurality of sealing mechanisms.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Friend *et al.* (U.S. Patent No. 6,047,970) in view of Otto *et al.* (U.S. Patent No. 6,092,637). Friend discloses a sealing mechanism substantially as claimed, wherein the inside corner of the retaining member has a curved surface. Friend does not expressly disclose said curved surface having a radius of curvature equal to or larger than '0.1'. Otto discloses a sealing element that teaches the reduction of stress increases in proportion to the size of the radii, see column 2, lines 5-15. Therefore, it would have been obvious to one having ordinary skill in the art at the time the

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invention was made to utilize the teachings of Otto, in regards to the radii size, to provide Friend with a sufficiently large stress-reducing curve. The motivation for doing so would have been to achieve an overall minimal amount of stress, thereby increasing the service life of said sealing mechanism.

11. Claims 4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend *et al.* (U.S. Patent No. 6,047,970) in view of Nagasawa (U.S. Patent No. 4,623,153). Friend discloses a sealing mechanism substantially as claimed, wherein said mechanism comprises a flexible member. However, Friend does not expressly disclose said flexible member being constructed from a material being resistant to penetration of the sealed fluid, having a low-coefficient of friction as well as a swelling rate of 30% or less. For the purposes of examination and as admitted by applicant, fluorine-based rubber is considered to possess a swelling rate of 30% or less, see the Detailed Description of the Preferred Embodiments, page 14, lines 11-13. Nagasawa discloses a sealing mechanism having a flexible member (i.e. sealing lip (4)) which maybe constructed from a synthetic resin such as polytetrafluoroethylene (PTFE), wherein the PTFE, through modification, may be afforded a low coefficient of friction and made resistant to penetration of the sealed fluid, see column 4, lines 40-55. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to utilize the teachings of Nagasawa, in regards to the use of the well-known material PTFE in construction of said flexible member, to modify Friend such that any over-stressing caused by expansion of the sealing member is prevented. Furthermore, it would have been obvious to utilize the teachings of Nagasawa, in regards to the modification of PTFE, to provide Friend's sealing mechanism with

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increased seal-ability as well as a lower-coefficient of friction, thereby increasing the service life of the sealing mechanism.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Friend *et al.* (U.S. Patent No. 6,047,970) in view of Wada *et al.* (U.S. Patent No. 5,595,697). Friend discloses a sealing mechanism substantially as claimed, wherein said sealing mechanism comprises a retaining member. Friend does not disclose said retaining member having a plurality of through-holes. Wada discloses a sealing device that teaches the use of reinforcing ring (106) having a plurality of holes (107), see column 1, lines 30-35. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to utilize the teachings of Wada, in regards to a plurality of holes on the retaining member, to facilitate securing of said of member.

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Friend *et al.* (U.S. Patent No. 6,047,970), Vegella (U.S. Patent No. 4,060,023), Otto *et al.* (U.S. Patent No. 6,092,637), Nagasawa (U.S. Patent No. 4,623,153), and Wada *et al.* (U.S. Patent No. 5,595,697) in view of Staudt *et al.* (U.S. Patent No. 3,963,014). Friend, as modified by Vegella, Otto, Nagasawa, and Wada discloses a sealing mechanism substantially as claimed, but does not disclose said mechanism being provided on a fuel pump having a reciprocating plunger, and a cylinder which is slip-fitted with the plunger and in which a variable-volume pressurizing chamber is formed with the reciprocating motion of said plunger. Staudt discloses a fuel injection pump, wherein said pump is provided with a sealing mechanism, see Abstract. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Staudt, in regards to providing a fuel pump with a sealing mechanism as

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claimed, to utilize Friend, as modified by Vegella, Otto, Nagasawa, and Wada, in a fuel pump as a means of preventing fuel leakage.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Millonig *et al.* (U.S. Patent No. 5,431,415), Rericha *et al.* (U.S. Patent No. 4,789,166), Kayukawa *et al.* (U.S. Patent No. 5,562,182), Pauler *et al.* (U.S. Patent No. 5,642,889), Riess (U.S. Patent No. 6,209,882), Wheeler (U.S. Patent No. 4,327,924), Hosokawa *et al.* (U.S. Patent No. 6,367,811), Guth *et al.* (U.S. Patent No. 6,345,825), Mitumaru (U.S. Patent No. 4,660,839), Wheeler (U.S. Patent No. 5,509,670), Duncan (U.S. Patent No. 5,198,053), Ritchey (U.S. Patent No. 4,560,718) disclose a sealing mechanism substantially as claimed. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dinesh N Melwani whose telephone number is 703-305-4546. The examiner can normally be reached on M-F, 8:30-6 except every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. J. Swann can be reached on 703-306-4115. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-4115.



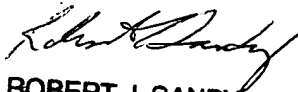
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DNM

July 28, 2002

  
ROBERT J. SANDY  
PRIMARY EXAMINER